THE INVENTION CLAIMED IS:

1. A mass transit vehicle comprising:

a traction motor responsive to a first signal;

a velocity detection device for outputting a second signal; and

a control system responsive to said second signal for generating a third signal and outputting said first signal, the control system including a filter for isolating a carrying signal from a resonance signal superimposed thereon, said resonance signal corresponding to a resonance signal superimposed on said second signal.

2. The mass transit vehicle of claim 1, wherein:

said carrying signal is said third signal; and

said filter outputs the isolated third signal.

3. The mass transit vehicle of claim 2, wherein said control system includes an automatic control block operating under the control of a control program for outputting said third signal as a function of said second signal and said first signal.

4. The mass transit vehicle of claim 3, wherein said control system further includes:

a communication and control block responsive to said isolated third signal for outputting a fourth signal; and

a propulsion and control block responsive to said fourth signal for outputting said first signal.

5. The mass transit vehicle of claim 4, wherein:

said automatic control block, said communication and control block, and said propulsion and control block each introduce a time delay between the time a signal is received thereby and the time a responsive signal is output thereby;

the sum of delays equals a loop delay time;

one divided by the loop delay time (1/ loop delay time) equals a loop delay frequency; and

said filter filters at least said loop delay frequency.

6. The mass transit vehicle of claim 5, wherein:

said first signal is a speed control signal and said third signal is a rate request signal;

said velocity detection device is a tachometer and said second signal is a tachometer signal; and

said tachometer is responsive to an angular velocity of said traction motor for outputting said tachometer signal indicative thereof.

7. The mass transit vehicle of claim 1, wherein:

said carrying signal is said first signal; and

said filter outputs the isolated resonance signal.

8. The mass transit vehicle of claim 7, wherein said control system includes an automatic control block operating under the control of a control program for outputting said third signal as a function of said second signal.

9. The mass transit vehicle of claim 7, wherein said control system includes a compensator block for processing said isolated resonance signal and outputting a compensated isolated resonance signal.

10. The mass transit vehicle of claim 9, wherein said control system further includes a summing junction block operative to combine said compensated isolated resonance signal and said third signal, said summing junction outputting an isolated third signal.

11. The mass transit vehicle of claim 10, wherein said control system further includes:

a communication and control block responsive to said isolated third signal for outputting a fourth signal; and

a propulsion and control block responsive to said fourth signal for outputting said first signal.

12. The mass transit vehicle of claim 11, wherein:

said automatic control block, said communication and control block, and said propulsion and control block each introduce a time delay between the time a signal is received thereby and the time a responsive signal is output thereby;

the sum of delays equals a loop delay time;

one divided by the loop delay time (1/ loop delay time) equals a loop delay frequency; and

said filter filters at least said loop delay frequency.

13. The mass transit vehicle of claim 12, wherein:

said first signal is a speed control signal and said third signal is a rate request signal;

said velocity detection device is a tachometer and said second signal is a tachometer signal; and

said tachometer is responsive to an angular velocity of said traction motor for outputting said tachometer signal indicative thereof.

14. A mass transit vehicle traction motor controller comprising:

a traction motor responsive to a speed control signal;

a tachometer responsive to an angular velocity of said traction motor for outputting a tachometer signal; and

a control system responsive to said tachometer signal for generating a rate request signal and outputting said speed control signal, the control system including a filter for isolating a carrying signal from a resonance signal superimposed thereon, said resonance signal corresponding to a resonance signal superimposed on said tachometer signal.

15. The controller of claim 14, wherein:

said carrying signal is said rate request signal; and

said filter outputs the isolated rate request signal.

16. The controller of claim 15, wherein said control system includes:

an automatic control block operating under the control of a control program for outputting said rate request signal as a function of said tachometer signal and said speed control signal;

a communication and control block responsive to said isolated rate request signal for outputting an intermediate signal; and

a propulsion and control block responsive to said intermediate signal for outputting said speed control signal.

17. The controller of claim 16, wherein:

said automatic control block, said communication and control block, and said propulsion and control block each introduce a time delay between the time a signal is received thereby and the time a responsive signal is output thereby;

the sum of delays equals a loop delay time;

one divided by the loop delay time (1/ loop delay time) equals a loop delay frequency; and

said filter filters at least said loop delay frequency.

18. The controller of claim 17, wherein said filter includes a band stop filter for decreasing the amplitude of said resonance signal.

19. The controller of claim 14, wherein said carrying signal is said speed control signal and wherein said filter output is an isolated resonance signal.

20. The controller of claim 19, wherein said control system includes:

an automatic control block operating under the control of a control program for outputting said rate request signal as a function of said tachometer signal;

a compensator block for processing said isolated resonance signal and outputting a compensated isolated resonance signal;

a summing junction block operative to combine said compensated isolated resonance signal and said rate request signal, said summing junction outputting an isolated rate request signal;

a communication and control block responsive to said isolated rate request signal for outputting an intermediate signal; and

a propulsion and control block responsive to said intermediate signal for outputting said speed control signal.

21. The controller of claim 20, wherein:

said automatic control block, said communication and control block, and said propulsion and control block each introduce a time delay between the time a signal is received thereby and the time a responsive signal is output thereby;

the sum of delays equals a loop delay time;

one divided by the loop delay time (1/ loop delay time) equals a loop delay frequency;

and

said filter filters at least said loop delay frequency.

22. The controller of claim 20, wherein said filter includes a band pass filter for decreasing the amplitude of said speed control signal.

23. A method of controlling a traction motor of a mass transit vehicle comprising the steps of:

a) receiving a tachometer signal having a resonance signal superimposed thereon;

b) processing said tachometer signal and said resonance signal to produce a rate request signal having said resonance signal superimposed thereon;

c) decreasing an amplitude of said resonance signal thereby producing an isolated rate request signal; and

d) processing said isolated rate request signal to produce a speed control signal that is configured to cause a traction motor of a mass transit vehicle to provide motive force to the mass transit vehicle at a rate related to a value of said speed control signal.

24. The method of claim 23, wherein step (c) includes band stop filtering said rate request signal having said resonance signal superimposed thereon to generate said isolated rate request signal.

25. The method of claim 23, wherein step (b) includes feeding back said speed control signal for processing with said tachometer signal having said resonance signal superimposed thereon to produce said rate request signal having said resonance signal superimposed thereon.

26. The method of claim 23, wherein step (d) includes the steps of :

processing said isolated rate request signal to produce a torque request signal; and

processing said torque request signal to produce said speed control signal.

27. The method of claim 23, wherein step (c) includes:

feeding back said speed control signal having said resonance signal superimposed thereon;

band pass filtering said speed control signal to generate an isolated resonance signal;

processing said isolated resonance signal to produce a compensated isolated resonance signal; and

combining said rate request signal having said resonance signal superimposed thereon with said compensated isolated resonance signal to produce said isolated rate request signal.

28. A system for controlling a traction motor of a mass transit vehicle comprising:

means for receiving a tachometer signal having a resonance signal superimposed thereon;

means for processing said tachometer signal and said resonance signal to produce a rate request signal having said resonance signal superimposed thereon;

means for decreasing an amplitude of said resonance signal thereby producing an isolated rate request signal; and

means for processing said isolated rate request signal to produce a speed control signal that is configured to cause a traction motor of a mass transit vehicle to provide motive force to the mass transit vehicle at a rate related to a value of said speed control signal.

29. The system of claim 28, wherein the means for decreasing the amplitude includes a band stop filter for filtering said rate request signal having said resonance signal superimposed thereon.

30. The system of claim 28, wherein the means for processing the tachometer signal includes means for feeding back said speed control signal for processing with said tachometer signal having said resonance signal superimposed thereon to produce said rate request signal having said resonance signal superimposed thereon.

31. The system of claim 28, wherein the means for processing said isolated rate request signal includes:

means for processing said isolated rate request signal to produce a torque request signal; and

means for processing said torque request signal to produce said speed control signal.

32. The system of claim 28, wherein the means for decreasing the amplitude includes:

means for feeding back said speed control signal having said resonance signal superimposed thereon;

means for band pass filtering said speed control signal to generate an isolated resonance signal;

means for processing said isolated resonance signal to produce a compensated isolated resonance signal; and

means for combining said rate request signal having said resonance signal superimposed thereon with said compensated isolated resonance signal to produce said isolated rate request signal.